Axxius 800

QUICK START GUIDE

Part Number: 002-0151-0006
Product Release: 2.2
May 2004

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Supporting Software Version:

Axxius 800 Controller Release 2.2

TSR Release 1.3

PREFACE

Safety Information

CAUTION! **ALWAYS USE CAUTION WHEN INSTALLING TELEPHONE LINES. READ THE CAUTIONS BELOW FOR DETAILS ON SAFETY GUIDELINES TO PREVENT INJURY.**

- **Never touch uninsulated telephone wires and terminals** unless the telephone line has been disconnected at the Network Interface (NI) as voltage potentials as high as 300 VAC may be present across the transmit and receive pairs.
- **Only use No. 26 AWG or larger** telecommunication line cord, to reduce the risk of fire.
- **Never install telephone wiring during a lightning storm.**
- **Never install telephone jacks in wet locations** unless the jack is specifically designed for wet locations.
- Refer to the installation section of this manual for a safe and proper installation procedure. All wiring external to this equipment should follow the current provision of the National Electrical Code.

Electrostatic Discharge (ESD) Precautions

ESD can damage processors, circuit cards, and other electronic components. Always observe the following precautions before installing a system component.

1. Do not remove a component from its protective packaging until ready to install it.
2. Wear a wrist grounding strap and attach it to a metal part of the system unit before handling components. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.

WARNING! INTEGRATED CIRCUITS (ICS) ARE EXTREMELY SUSCEPTIBLE TO ELECTROSTATIC DISCHARGE. UNLESS YOU ARE A QUALIFIED SERVICE TECHNICIAN WHO USES TOOLS AND TECHNIQUES THAT CONFORM TO ACCEPTED INDUSTRY PRACTICES, DO NOT HANDLE ICS.

The ESD warning label appears on packages and storage bags that contain static-sensitive products and components.

QUICK START GUIDE

In this Guide

- Unpacking and Inspection
- Installation Environment
- Assembly of Axxius 800
- Rack Mounting
- Compliant Installation
- Chassis Connections
- Connector Pinouts
- LEDs
- Provision a Unit

Unpacking and Inspection

WARNING! **OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC DEVICES.**

1. Inspect containers for damage during shipment. Report any damage to the freight carrier for possible insurance claims.
2. Compare packing list with office records. Report any discrepancies to the office.
3. Open shipping containers, be careful not to damage contents.
4. Inspect contents and report any damage.
5. If equipment must be returned for any reason, carefully repack equipment in the original shipping container with original packing materials if possible.
6. If equipment is to be installed later, replace equipment in original shipping container and store in a safe place until ready to install.

Installation Environment

The environment in which you are installing the Axxius 800 must meet the following conditions:

DANGER! **RESTRICTED ACCESS LOCATION FOR ACCESS 800: ACCESS CAN ONLY BE GAINED BY SERVICE PERSONNEL OR USERS WHO HAVE BEEN INSTRUCTED ABOUT THE POTENTIAL SAFETY HAZARDS THAT EXIST. ACCESS CAN ONLY BE GAINED TO THE EQUIPMENT LOCATION BY THE USE OF A TOOL OR LOCK AND KEY. TAKE PRECAUTIONS WHEN INSTALLING/SERVICING THE EQUIPMENT. HAZARDOUS ENERGY LEVELS EXIST ON THE POWER SUPPLY. BARE TELECOMMUNICATION NETWORK WIRING IS EXPOSED ON THE REAR PANEL. DISCONNECT FROM NETWORK BEFORE INSTALLING WIRE WRAP CONNECTIONS.**

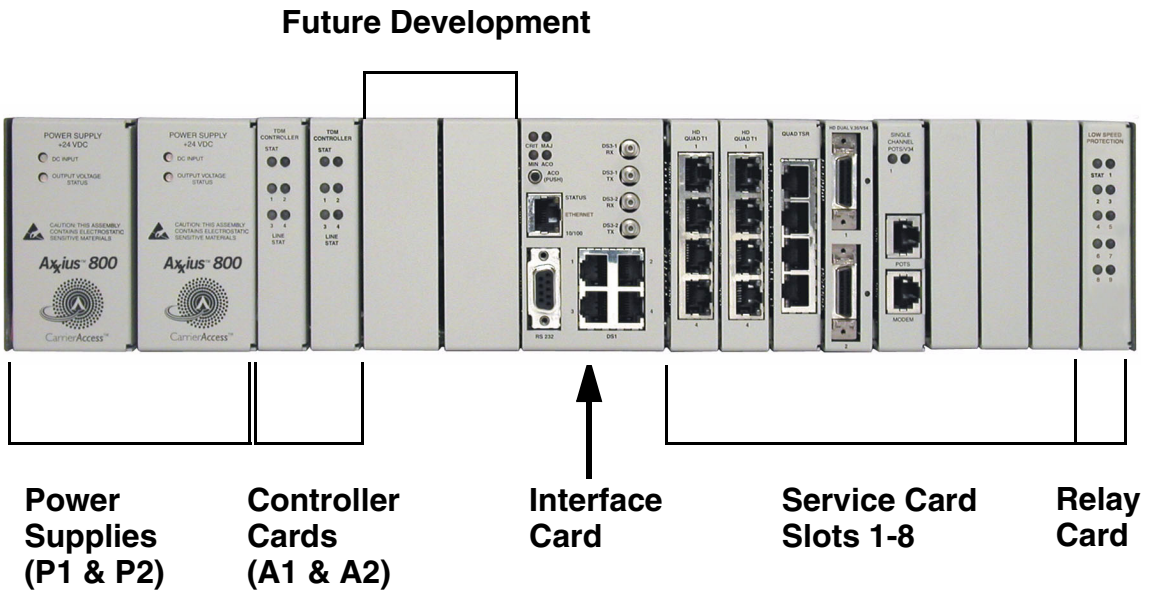
NOTE: Installation of unit in Operator Access Locations is possible for 48V powered units under certain circumstances. Please contact Customer Service for information on the Axxius DC Input Shroud Kit P/N 790-0027.

- Operating temperature range: -40° to 149° F (-40° to 65° C)
  *please see items following that do not operate within this range
- V.34 modem operating temperature range: 32° to 149° F (0° to 65° C)
- FXO, ISDN BRI, and OCU-DP service cards operating temperature range: 32° to 104° F (0° to 40° C)
- Storage temperature range: -40° to 158° F (-40° to 70° C)
- Cooling method is by free air convection
- Maximum operating altitude: 10,000 ft. (3,048 m)
- Minimum operating altitude: 197 ft. (60 m) below sea level
- Maximum non-operating altitude: 40,000 ft. (12,192 m)
- Relative humidity (non-condensing) range: 0 to 95%

Assembly of Axxius 800

The cards should be positioned according to the following guidelines:

- Power Supply(s) 24 or 48 VDC
  Single Power Supply - slot Power 1 **or** Power 2
  Dual Power Supplies - slot Power 1 and Power 2
- Controller card(s) DS1 or DS3
  Single Controller card - slot A1 **or** A2
  Dual Controller cards - slot A1 and A2
- Interface card
  The Interface card is designed with two boards that follow a single guide.
- Service Cards can be in any slot 1 through 8.
  Note: Cards that use the front cable connections should be loaded from Slot 8 to 1. This will minimize card access issues due to cable interference.
- Relay Card in the Relay slot.
- Always install blank faceplates in any unused slots.

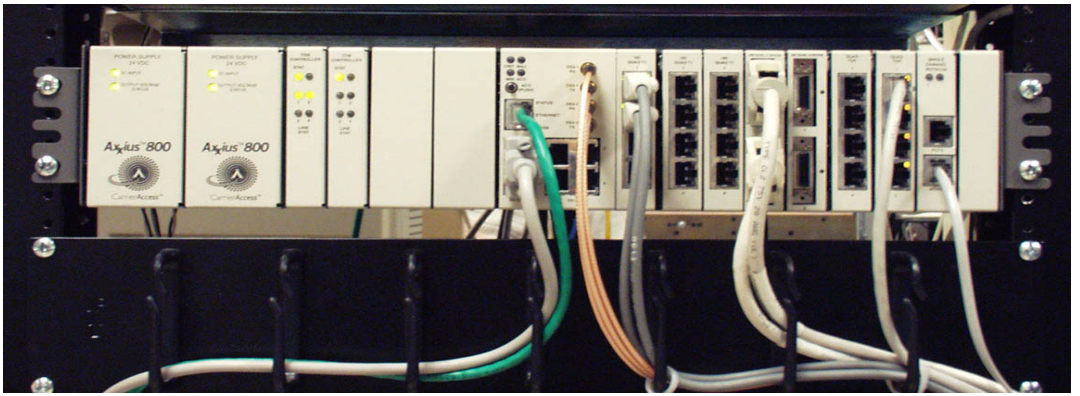


Rack Mounting

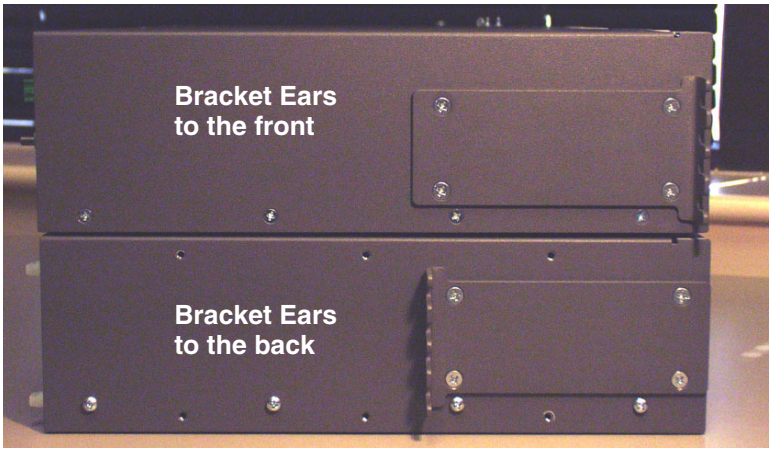
The Axxius 800 can be mounted on a 19 or 23 inch rack with Carrier Access mounting brackets.

NOTE: The Axxius 800 requires at least 3/4 inches of free air space above and below the chassis (approx 1/2 RU) for air circulation.

Always leave at least 14" clearance in front of the unit, to add and remove cards.



Axxius 800 mounted to a 19" rack with mounting brackets

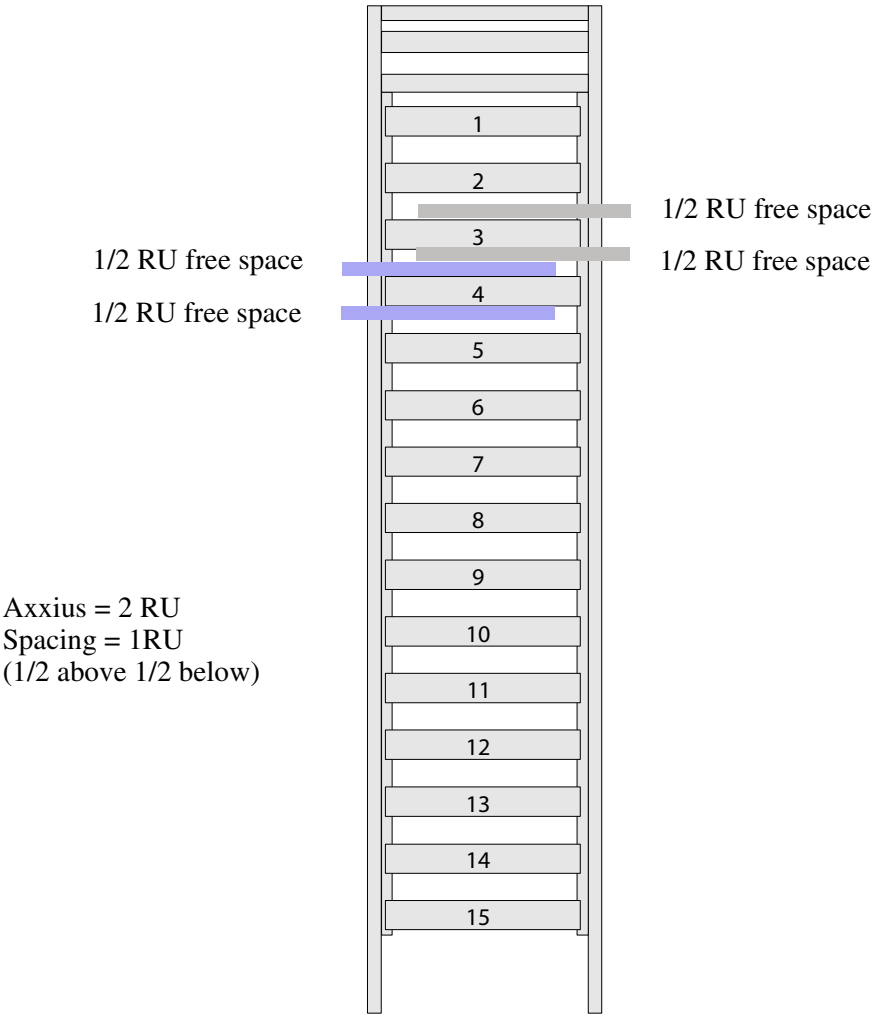


Axxius Front

Depending on the customer needs the mounting brackets can be mounted with fingers to the front or to the back of the unit

To maintain proper convection cooling, maintain at least 1/2 RU between the Axxius and any other equipment (each Axxius occupies 3 RU of rack space). Therefore, if one Axxius is mounted above another Axxius, then there would be a total of 1 RU between them (1/2 RU above the lower unit and 1/2 RU below the upper unit).

Using the 1/2 RU airspace guideline, up to 15 Axxius 800 units may be installed in a 7’ equipment rack



Compliant Installation

WARNING! **ALL TELECOMMUNICATION NETWORK CONNECTIONS MUST USE MINIMUM 26 AWG WIRE.**

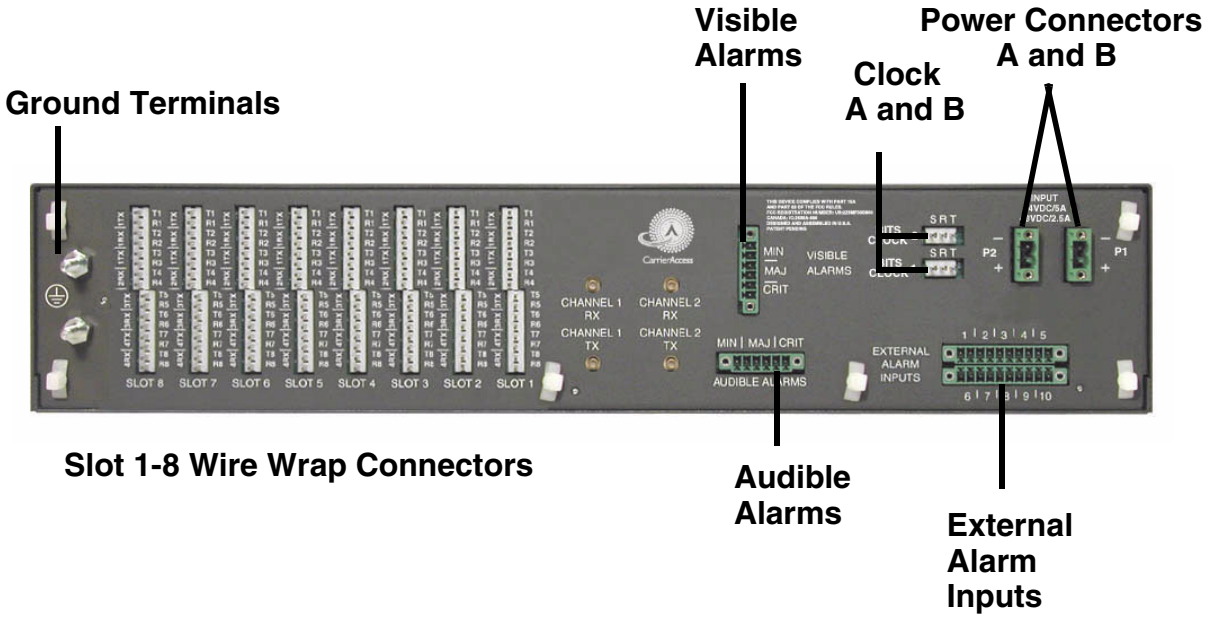
1. Mount unit in an area that meets Environment conditions, see *"Installation Environment" on page 3*.
2. Unit should have power supply(s), controller(s) and Interface cards installed before power up.

NOTE: All cards (power supplies, controllers, interface, relay and service) slide into the unit in the same manner. There are guides for each slot (top and bottom), which the card follows until it is firmly seated into the backplane.

3. Ground the system, secure the ground lugs to the terminals using the nuts provided. Attach #6 or #8 AWG copper wire to the terminal.
4. Install service cards.
5. Install blank faceplates in any slot that is not occupied.
6. Connect BITS Clock 1 and/or 2
7. Connect Alarming
8. Secure the power cable and the ground cable with a plastic tie (not included). Keep these cables separate from the signal cables.
9. Terminate each signal cable to its appropriate connector.
10. Secure the signal cables using the small holes along the bottom of the rack and plastic ties (not included).
11. Plug in power, to the system, apply the appropriate power for the installed Power Supply(s)

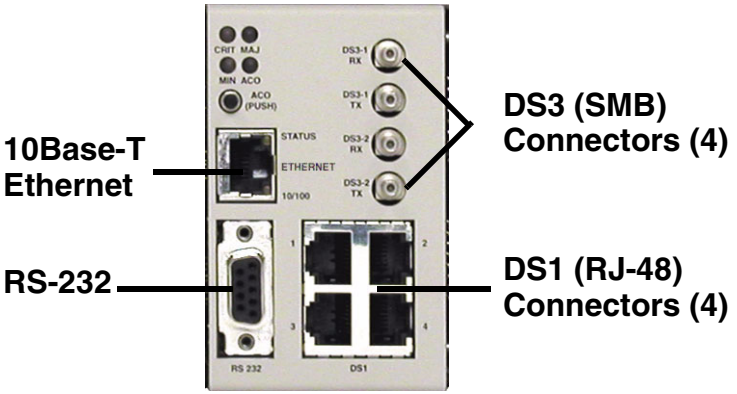
Chassis Connections

The following illustrations show all connectors on the rear, as well as the front (interface card) of the Axxius 800.



Back of the Axxius 800:

- Audible Alarms
- External Alarm Inputs
- Visible Alarms
- Input (power, P1 and P2)
- Bits Clock 1 and 2
- Wire Wrap Connectors (slots 1-8)
- Ground Lugs



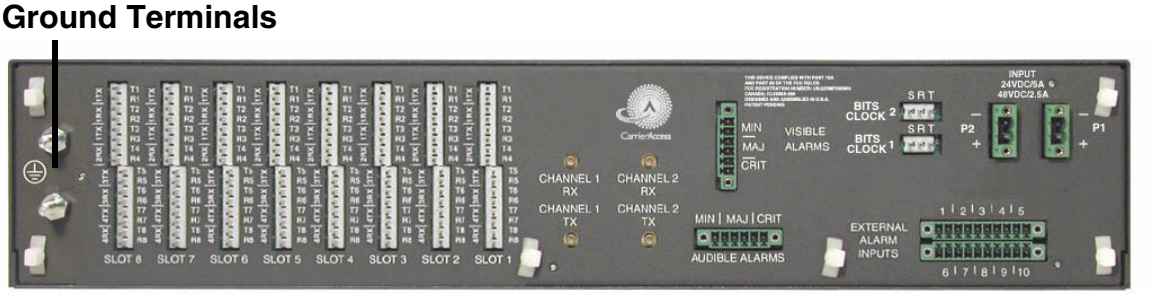
Front of the Axxius 800 - Interface Card

- 10Base-T Ethernet (RJ-48C)
- RS-232 Craft Port
- DS3-1 and 2 Transmit and Receive connectors (SMB)
- DS1 (1-4) connectors (RJ-48)

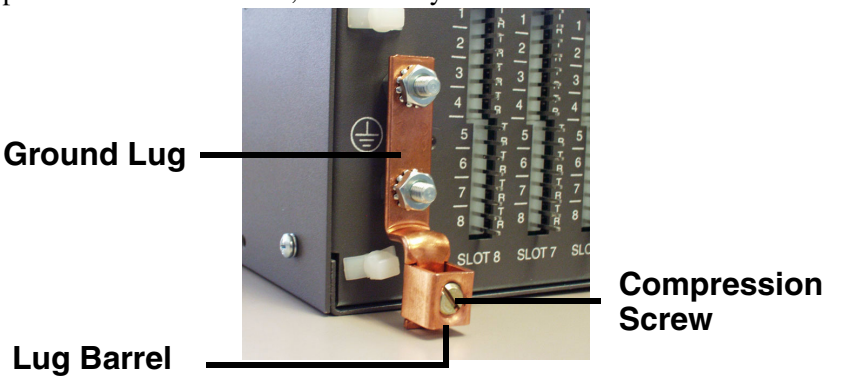
For information on this card and all connectors see the Axxius 800 User Manual *"Control Panel Interfaces" on page 11.*

CAUTION! **THE AXXIUS 800 CONTAINS CIRCUIT CARDS AND COMPONENTS THAT ARE SUBJECT TO DAMAGE BY ELECTROSTATIC DISCHARGE (ESD). ALWAYS FOLLOW THE *ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS.***

Chassis Ground Connector



1. Route wire (#6 or #8 AWG copper) from building ground to lug on Axxius 800.
2. Strip insulation off wire end, if necessary.



3. Loosen compression screw until opening is large enough to accept ground wire.
4. Insert ground wire into lug barrel, beneath compression plate and tighten compression screw.
5. Attach ground lug to chassis

Power Connections

There are three power supplies available with the Axxius 800; 24 VDC and 48 VDC and 48 VDC NI, all use this connector. The Axxius 800 supports a redundant power system, therefore there is INPUT (power) P1 and P2.

Input Power

Power Supply	Rated Amperage	Recommended External Input Fuse
24 VDC	5 Amp	7 Amp
48 VDC/48 VDC NI	2.5 Amp	3.5 Amp

A separate fuse should be used for each DC input

NOTE: If two power supplies are installed into the system they MUST be of the same type (24 VDC, 48 VDC or 48 VDC NI).

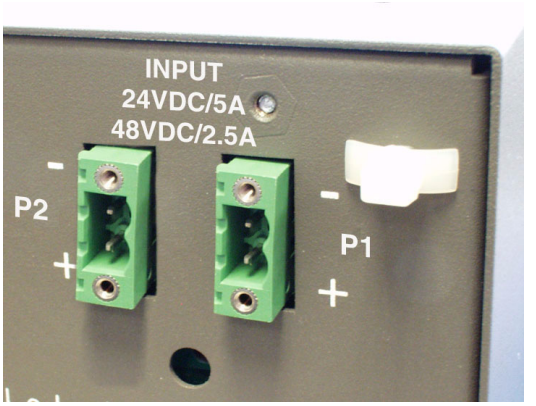
Wire each connector to a power source:

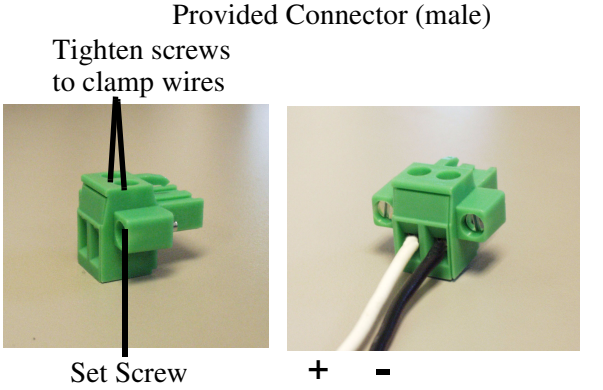
1. Ensure that no power is present on the two wires to be connected.

DANGER! **POSSIBLE SHOCK HAZARD EXISTS, PLEASE FOLLOW INSTRUCTIONS CAREFULLY.**

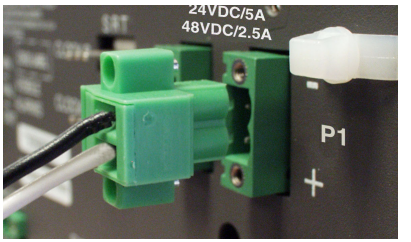
2. Strip the two wires from the power source so that approximately 5/16 inch of bare wire is exposed. 16 or 18 AWG insulated copper wire is recommended for power connections.
3. Insert the Battery Return and DC wires into the appropriate square holes, one at a time.
4. Tighten screws to clamp wires.

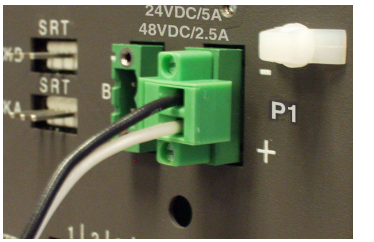
5. Ensure that no bare wire shows after the wires are installed.





6. Plug connector in the INPUT (power) connector, as seen in the graphic and secure with set screws.

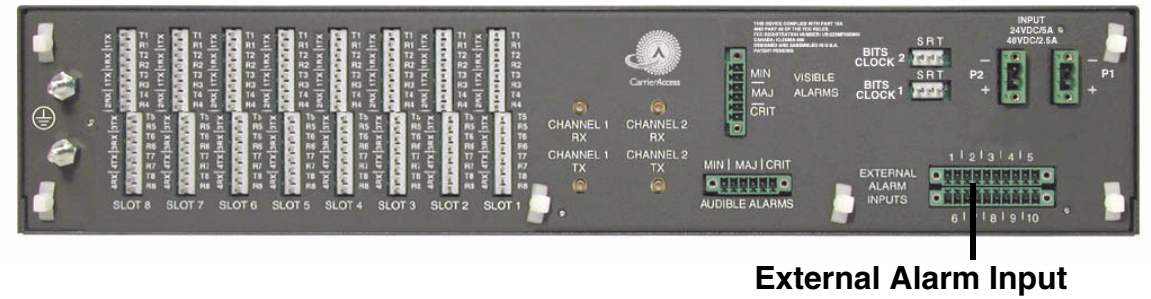




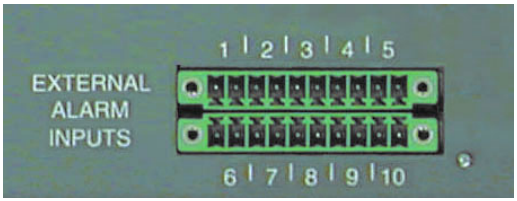
7. Apply power to connector.
8. Verify with voltmeter that voltage is correct and polarity is correct.
9. Plug connector(s) into the Axxius 800.
10. A green light should appear on the DC Input LED on the front of the Power Supply.

External Alarm Inputs

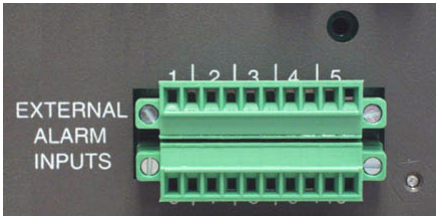
The external alarm input connector supports 10 alarm inputs and is composed of two 10-pin connectors (two input pairs for each).



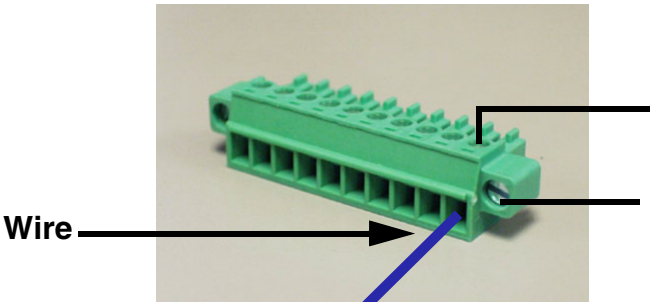
1. Strip wire so that approximately 5/16 of bare wire is exposed.



back of Axxius



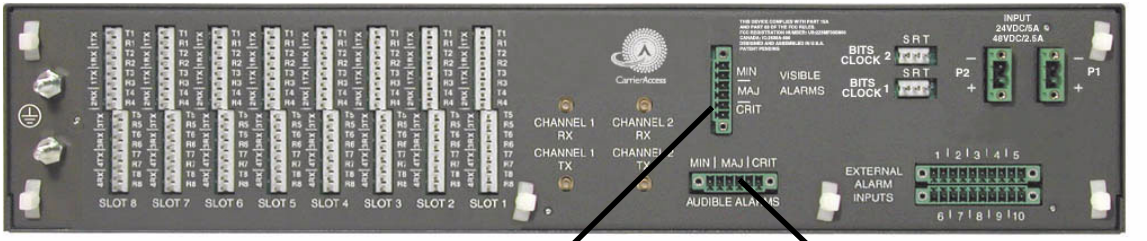
Connector plugged into Axxius



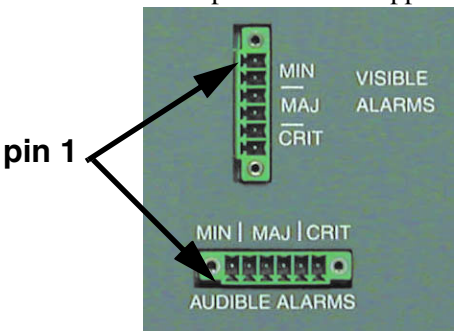
2. Insert wire into opening and tighten screw to clamp wire.
3. Ensure that no bare wire shows after the wires are installed.
4. Plug connector in the EXTERNAL ALARMS INPUTS connector, as seen in the graphic above and secure with set screws.

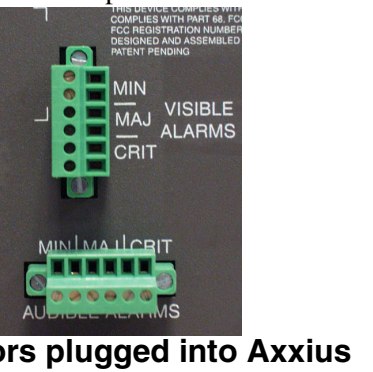
Visible and Audible Alarms

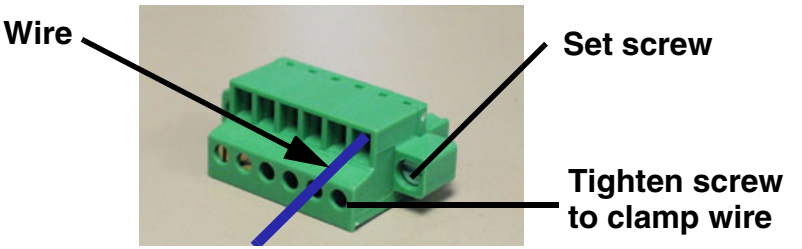
The external alarm connectors are six-pin connectors with two output pairs for each alarm level (pins 1 & 2 for minor, pins 3 & 4 for major and 5 & 6 for critical alarms).



1. Strip wire so that approximately 5/16 of bare wire is exposed.





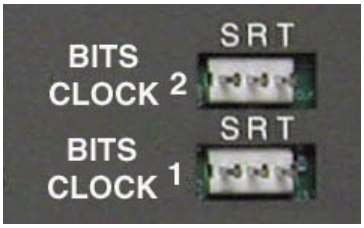


2. Insert wire into opening and tighten screw to clamp wire.
3. Ensure that no bare wire shows after the wires are installed.
4. Plug connector in the AUDIBLE ALARMS or VISIBLE ALARMS connector, as seen in the graphic above and secure with set screws.

BITS Clock 1/BITS Clock 2

The external alarm connectors are three-pin wire-wrap connectors. One for each, Tip (T), Ring (R) and Shield (S). Tip and Ring are the two connections for the 100 ohm differential signal to the box. Shield is for grounding the shield of the clock cable to the Axxius. If the customer is not using shielded cable, then only the Tip and Ring is connected.

Bits Clock 1 and 2

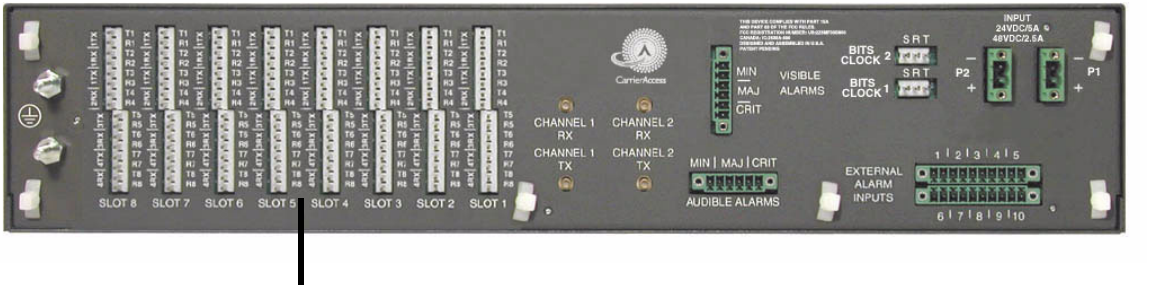


back of Axxius

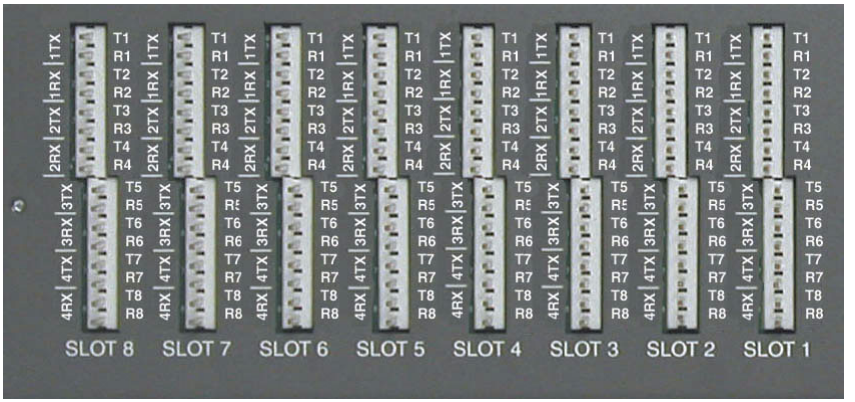
Slot (1-8) Wire Wrap Connectors

The Axxius 800 provides wire wrap connectors for each slot (1-8) of the unit. Pinouts are clearly labeled with the pins.

WARNING! **DISCONNECT FROM NETWORK BEFORE INSTALLING WIRE WRAP CONNECTIONS.**



Wire Wrap Connectors



Wire Wrap Pinout for 4 Wire Services

Wire Wrap Pins	T1	Name	Description
1RX	Port 1	Receive Ring	Receive from DS1 network
		Receive Tip	Receive from DS1 network
1TX		Transmit Ring	To DS1 network
		Transmit Tip	To DS1 network
2RX	Port 2	Receive Ring	Receive from DS1 network
		Receive Tip	Receive from DS1 network
2TX		Transmit Ring	To DS1 network
		Transmit Tip	To DS1 network
3RX	Port 3	Receive Ring	Receive from DS1 network
		Receive Tip	Receive from DS1 network
3TX		Transmit Ring	To DS1 network
		Transmit Tip	To DS1 network
4RX	Port 4	Receive Ring	Receive from DS1 network
		Receive Tip	Receive from DS1 network
4TX		Transmit Ring	To DS1 network
		Transmit Tip	To DS1 network

Wire Wrap Pinout 2 Wire Services

Wire Wrap Pins	Description
T1	Channel 1 Transmit Tip
R1	Channel 1 Transmit Ring
T2	Channel 2 Transmit Tip
R2	Channel 2 Transmit Ring
T3	Channel 3 Transmit Tip
R3	Channel 3 Transmit Ring
T4	Channel 4 Transmit Tip
R4	Channel 4 Transmit Ring
T5	Channel 5 Transmit Tip
R5	Channel 5 Transmit Ring
T6	Channel 6 Transmit Tip
R6	Channel 6 Transmit Ring
T7	Channel 7 Transmit Tip
R7	Channel 7 Transmit Ring
T8	Channel 8 Transmit Tip
R8	Channel 8 Transmit Ring

Standard Telco Color Code

Circuit connections are made at the wire wrap connectors. The pinouts are as follows:

Pair	Pin Location	Function	Color Code
1	26 1	Tip Channel 1 Ring Channel 1	White/Blue Blue/White
2	27 2	Tip Channel 2 Ring Channel 2	White/Orange Orange/White
3	28 3	Tip Channel 3 Ring Channel 3	White/Green Green/White
4	29 4	Tip Channel 4 Ring Channel 4	White/Brown Brown/White
5	30 5	Tip Channel 5 Ring Channel 5	White/Slate Slate/White
6	31 6	Tip Channel 6 Ring Channel 6	Red/Blue Blue/Red
7	32 7	Tip Channel 7 Ring Channel 7	Red/Orange Orange/Red
8	33 8	Tip Channel 8 Ring Channel 8	Red/Green Green/Red
9	34 9	Tip Channel 9 Ring Channel 9	Red/Brown Brown/Red
10	35 10	Tip Channel 10 Ring Channel 10	Red/Slate Slate/Red
11	36 11	Tip Channel 11 Ring Channel 11	Black/Blue Blue/Black
12	37 12	Tip Channel 12 Ring Channel 12	Black/Orange Orange/Black
13	38 13	Tip Channel 13 Ring Channel 13	Black/Green Green/Black
14	39 14	Tip Channel 14 Ring Channel 14	Black/Brown Brown/Black

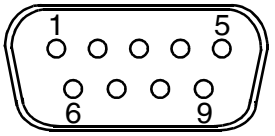
Pair	Pin Location	Function	Color Code
15	40 15	Tip Channel 15 Ring Channel 15	Black/Slate Slate/Black
16	41 16	Tip Channel 16 Ring Channel 16	Yellow/Blue Blue/Yellow
17	42 17	Tip Channel 17 Ring Channel 17	Yellow/Orange Orange/Yellow
18	43 18	Tip Channel 18 Ring Channel 18	Yellow/Green Green/Yellow
19	44 19	Tip Channel 19 Ring Channel 19	Yellow/Brown Brown/Yellow
20	45 20	Tip Channel 20 Ring Channel 20	Yellow/Slate Slate/Yellow
21	46 21	Tip Channel 21 Ring Channel 21	Violet/Blue Blue/Violet
22	47 22	Tip Channel 22 Ring Channel 22	Violet/Orange Orange/Violet
23	48 23	Tip Channel 23 Ring Channel 23	Violet/Green Green/Violet
24	49 24	Tip Channel 24 Ring Channel 24	Violet/Brown Brown/Violet
25	50 25	Not used/Spare at this time	Violet/Slate Slate/Violet

Connector Pinouts

- **Control Panel Interface Card**
- **OCU-DP (DDS RJ-48S)**
- **Quad T1/ADPCM Cards RJ-48 Connector**
- **TSR Card 10/100Base-TX Ethernet**
- **V.35 DCE (DB-26)**

Control Panel Interface Card

RS-232 Craft Port (Female DB-9)

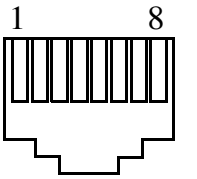


The RS-232 craft port connects via a female DB-9 connector on the Axxius 800.

The pinouts are as follows:

Pin Number	Direction	Description
1	Outbound	Carrier Detect
2	Outbound	Receive Data
3	Inbound	Transmit Data
4	Inbound	Data Terminal Ready
5		Signal Ground
6	Outbound	Data Set Ready
7	Inbound	Request to Send
8	Outbound	Clear to Send
9	n/c	Not Connected

DS1 Connection Ports



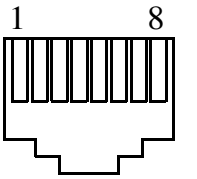
The DS1 connection ports are each equipped with a standard RJ-48C (female) on the Axxius 800 unit.

The pinouts are as follows:

DS1 (RJ-48C)

Pin	Name	Description
1	Receive Ring	Receive from DS1 network
2	Receive Tip	Receive from DS1 network
3	N/C	Not connected
4	Transmit Ring	To DS1 network
5	Transmit Tip	To DS1 network
6 -8	N/C	Not connected

10/100Base-TX Ethernet



The 10/100Base-TX Ethernet (female) port to connect to a remote management tool such as Telnet or an SNMP-based Network Management System.

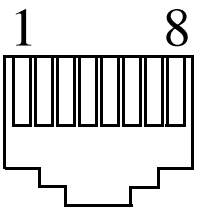
The pinouts are as follows:

Ethernet (RJ-45)

Pin	Name	Description
1	Receive +	Receive from network
2	Receive -	Receive from network
3	Transmit +	Transmit to network
4	N/C	Not connected
5	N/C	Not connected
6	Transmit -	Transmit to network
7 - 8	N/C	Not connected

OCU-DP (DDS RJ-48S)

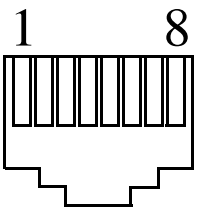
The pinout for RJ-48S female is as follows:



Pin	Function	Description
1	Receives Data (R-1)	From Customer to Network Interface
2	Receives Data (T-1)	From Customer to Network Interface
3-6	Not Used	
7	Transmits Data (T)	From Network Interface to Customer
8	Transmits Data (R)	From Network Interface to Customer

Note: The above listed functions are relative to this port.

Quad T1/ADPCM Cards RJ-48 Connector

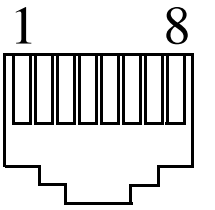


There are four RJ-48 (female) connectors on the front of the Quad T1 and Quad DS1 ADPCM Card.

The pinouts are as follows:

Pin	Name	Description
1	Receive Ring	Receive from DS1 network
2	Receive Tip	Receive from DS1 network
3	n/c	Not connected
4	Transmit Ring	To DS1 network
5	Transmit Tip	To DS1 network
6 - 7	n/c	Not connected
8	Chassis Ground	

TSR Card 10/100Base-TX Ethernet



There are four RJ-45C (female) connectors on the front of the Quad TSR Card.

The pinout is as follows:

Ethernet (RJ-45C)

Pin	10/100Base-TX Signals	RS-232 Signals
1	Transmit + (output)	CTS (input)
2	Transmit - (output)	RTS (input)
3	Receive + (input)	DSR (input)
4	n/c	TXD (output)
5	n/c	RXD (input)
6	Receive - (input)	DCD (input)
7	n/c	DTR (output)
8	n/c	Signal ground

V.35 DCE (DB-26)

The V.35 DCE data port connection is made at the sub-miniature DB-26 connector on the Axxius 800 using the 10-foot, 25-foot, or 50 foot Carrier Access DTE V.35 cable equipped with a sub-miniature DB-26 connector and a 34-pin Winchester connector.

This cable is used to connect the Axxius 800 V.35 DCE data ports to synchronous V.35 DTE data sources up to 1.536 Mbps, all rates (1-24) Nx56 or Nx64 channel-rate progression.

The Carrier Access Corporation V.35 data cables are built according to the pin assignments listed below:

Sub-miniature DB-26	Signal	Winchester 34-pin (female)	Paired Signals
1 (+ Shield)	← Protective Ground →	A	
7	← Signal Ground →	B	
2	← Transmit Data A —	P	
14	← Transmit Data B —	S	
3	— Receive Data A →	R	
16	— Receive Data B →	T	
4	← RTS —	C	
20	← DTR —	H	
5	— CTS →	D	
6	— DSR →	E	
12	— Test Mode →	K	
8	— CD (RLSD) →	F	
11	← External Clock A —	U	
24	← External Clock B —	W	
10	— Xmit Clock A →	Y	
23	— Xmit Clock B →	AA	
15	— Receive Clock A →	V	
17	— Receive Clock B →	X	
22	← Local Loopback —	J	
25	← Remote Loopback —	BB	
9, 13, 18	Open Pins/No Contact	L, N, NN	
19, 21, 26	Open Pins/No Contact		

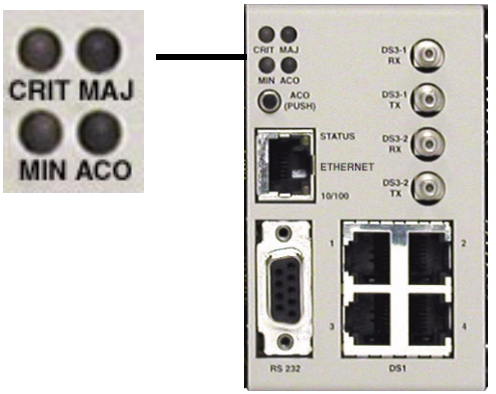
LEDs

This section provides details about the LEDs on the Axxius 800.

- **Control Panel LEDs**
- **DS1 Controller Card**
- **DS3 Controller Card**
- **24VDC and 48VDC Power Supplies**
- **FXO Card**
- **ISDN BRI Cards**
- **OCU-DP Card**
- **POTS Cards**
- **Quad T1/DS1 ADPCM Cards**
- **Quad TSR Card**
- **V.35 Card**
- **Low Speed Protection Card**

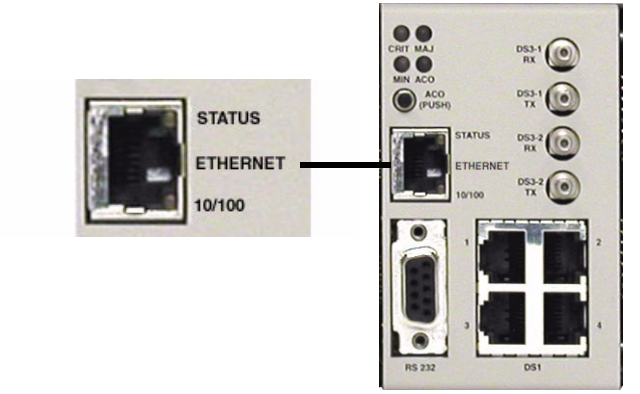
Control Panel LEDs

Alarm LEDs



LED	State	Description
CRITICAL	Off	No critical alarms present
	Red	Critical alarms present
MAJOR	Off	No major alarms present
	Red	Major alarm present
MINOR	Off	No minor alarms present
	Red	Minor alarms present
ACO	Off	Normal mode. No alarms are being suppressed.
	Red	Alarm cutoff active. One or more active alarms suppressed.

Ethernet LEDs



LED	State	Description
STATUS	Off	Link Down
	Green	Link Up
	Flashing Green	Traffic on Link

When Status LED is on or flashing:

LED	State	Description
10/100	Off	Link is 10 Mb
	Green	Link is 100 Mb

DS1 Controller Card

The DS1 Controller has a set of six LEDs. The table below describes each LED.

LED	State	Description
STAT	Green	Active
	Red	Failed
	Flashing Red	System Reset
	Yellow	Hot Standby
	Flashing Yellow	Cold Standby
	Alternating Red/Yellow	Application Loading
LINE STAT (1-4)	Off	Port Shutdown
	Green	Good Line
	Slow Blink Green	Loopback
	Red	LOS
	Slow Blink Red	LOF, AIS
	Fast Blink Red	Card Failure
	Yellow	Code Violation
	Slow Blink Yellow	RAI

DS3 Controller Card

The DS3 Controller has a set of six LEDs. The table below describes each LED.

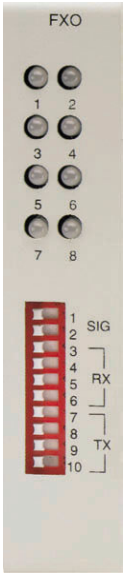
LED	State	Description
STAT	Green	Active
	Red	Failed
	Flashing Red	System Reset
	Yellow	Hot Standby
	Flashing Yellow	Cold Standby
	Alternating Red/Yellow	Application Loading
LINE STAT (1-4)	Off	NO transport or port shutdown
	Green	Good Line
	Slow Blink Green	Loopback
	Red	LOS
	Slow Blink Red	LOF, AIS
	Fast Blink Red	Card Failure
	Yellow	Standby, when path protection is active
	Slow Blink Yellow	RAI, IDLE, or if protection is active Out-of-Service

24VDC and 48VDC Power Supplies

Both power supply cards have identical LEDs, as described in the table below.

LED	State	Description
DC Input	Off	DC input missing or fuse blown
	Yellow	Under or over-voltage
	Green	Valid DC input present
Output Voltage Status	Off	No 5V output (neither power supply operating)
	Red	5V output not functioning (2nd unit operating)
	Green	5V output good

FXO Card



Each FXO port on a card has its own LED, described in the table below.

State	Loop Start Meaning	Ground Start Meaning	Dial Pulse Termination Meaning
Off	N/A	Idle (tip open)	Idle (loop open)
Green	Idle	Tip ground (incoming seizure)	Incoming seizure
Red	N/A	Ring ground (outgoing seizure)	Loop closure (outgoing seizure)
Yellow	Call in progress	Call in progress	Call in progress (reverse battery)
Flashing green	Ringing	Ringing	N/A

ISDN BRI Cards

Each ISDN BRI on a card has its own LED, described on the table below.

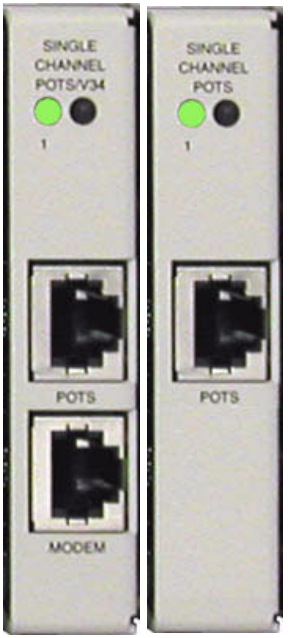
State	Description
Off	Line U-interface is attempting synchronization, or BRI is out of service.
Red	Line alarm (LOS or self test failure)
Yellow	ES or SES has occurred.
Flashing yellow	Line U-interface is synchronized with customer equipment, but is not passing customer data.
Flashing green	Line U-interface is in external loopback toward the switch at the unit.
Green	Normal (Line U-interface is active and transparently passing customer data.)

OCU-DP Card

There are two LEDs for each channel on the OCU-DP card. The function for each LED is listed below:

State	LED	Description
Yellow Flickering	ALL	Boot Software in control.
Green (walking down) Red (walking up)	ALL	Application Software in control (repeated 3.5 times).
Red, slow flash	ALL	In Boot. Application flash code checksums did not match and Boot is waiting for application download.
Red	ALL	In Application code waiting for Controller to issue SW/HW revision request. This is the first request that comes from the OCU-DP card manager in the Controller.
Green Yellow	Top Bottom	Port in Self-test. Duration is 5-8 seconds.
Off	Top Bottom	Port is set down (Out-Of-Service).
Green	Top	Port is receiving valid signals.
Red	Top	Port is receiving no signal (primary) or no frame sync (secondary or clear channel).
Red Flashing	Bottom	Port is receiving bipolar violations
Yellow	Bottom	Port is in loopback.

Single Channel POTS Cards



The POTs channel LED (left) status is described in the table below.

State	Loop Start Meaning
Off	Calling Party Disconnect
Green	Idle
Red	N/A
Yellow	Call in progress
Flashing green	Ringing

The second LED (right) is a status LED for the MODEM.

State	Loop Start Meaning
Off	Calling Party Disconnect
Green	Ringing
Yellow	Carrier Detect

Quad DS1/E1, Quad T1, and Quad DS1 ADPCM Cards

Each channel on the Quad DS1/E1, Quad T1 and Quad DS1 ADPCM cards have two LEDs per port. The description of the top LED is shown below, the bottom LED is not used with this application.

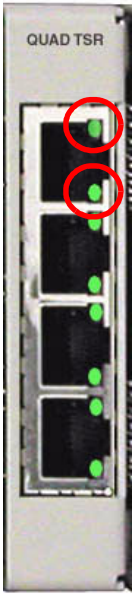
Top LED (active)

Bottom LED (not used)

State	Description
Off	Off line
Green	Normal
Red	Loss of Signal (LOS)
Yellow	Bipolar Violation (BPV)
Flashing Green	Loopback active
Flashing Yellow	Yellow Alarm (Remote Alarm Indication)
Flashing Red (Slow)	Loss of Frame (LOF) or Alarm Indication Signal (AIS)
Flashing Red (Fast)	Self-test Failure

Quad TSR Card

The Quad TSR has 2 LEDs per port.



At Power-up

TOP LED	Bottom LED	Description
Off	Off	Loss of power
Red	Red	Card is inoperative
Flashing Red	Flashing Red	Self-test or Boot in-process

Normal Operation

TOP LED	Bottom LED	Description
Green Solid (Link)	Green Solid (Link)	Port set for Ethernet - see below
Flashing Red	Flashing Red	Self-test or Boot in-process

Port Set for Ethernet

Top LED indicates 100M Link, Bottom LED indicates 10M Link

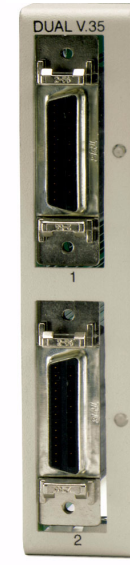
State	Description
Off	No Ethernet link
Green	Link but no activity
Red Flashing	Current Ethernet collision
Green Flashing	Current Ethernet receive
Yellow Flashing	Current Ethernet transmit

Port Set for RS-232

TOP LED	Bottom LED	Description
Yellow	Flashing Yellow	Current transmit
Yellow	Flashing Green	Current receive
Yellow	Off	No Activity

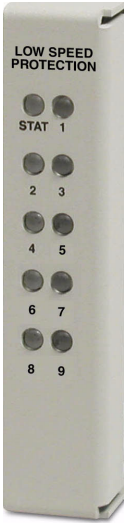
V.35 Card

Each V.35 port has its own LED, as shown in the table below.



State	Description
Off	No T1 Assignment
Green	Normal (CD/RTS) Active
Red	CD inactive (T1-side failure)
Yellow	RTS inactive (equipment-side failure)
Flashing Yellow	Loopback toward T1 or equipment loop test
Flashing Green	Loopback toward equipment or network loop test

Low Speed Protection Card



The Low Speed Protection card has 10 LEDs, which are defined below.

LED	State	Description
STAT	Green	Enabled
	Red	Disabled
	Flashing Green	Disabled
Slot Status (1-8)	Off	The corresponding slot is not being protected via the Protection card.
	Yellow	One or more ports of the corresponding slot are being protected via the Protection card.

Each channel on the Quad T1 card has two LEDs. The description of the top LED is shown below, the bottom LED is not used with this application.

Quad T1 Backup Card

State	Description
Off	Not set up as Backup
Green	Port is switched to protection mode (the port it is protecting will be flashing green)
Red	Displays red on backup card after other T1 port in same line is set up to be protected
Flashing Green	Port is set up and ready to grant backup when needed
Flashing Yellow	Port is booting up to be backup card

Quad T1 Protected Card

State	Description
Off	Not set up as Backup
Green	Protected port is healthy and not in protected mode
Red	Displays red on backup card after other T1 port in same line is set up to be protected
Flashing Green	Port has failed and the Backup card has granted protection
Flashing Yellow	Port is booting up to be backup card

Provision a Unit

- Local using CLI, Telnet, Modem or SNMP (Valet)
- Remotely over an in-band DS0
- Remotely over an SNMP network using NetworkValet EMS

Command Line Interface (CLI)

You can access the CLI using either of the following methods:

- RS-232 connected to the DB-9 port.
- Telnet via Ethernet (10Base-T)
- Modem

Setting up a CLI connection

To connect to the CLI via the RS-232 port, set up a connection to a PC serial port or dumb terminal using Hyperterm, ProComm, or similar terminal emulation software:

- Set the Port Settings to:
  Bits per second: **9600**
  Data bits: **8**
  Parity: **None**
  Stop bits: **1**
  Flow control: **None**
- Set the Terminal Emulation to: **VT100**

NOTE: The Default IP address of the Axxius 800 Controller is 10.0.0.10.

Basic System Setup

Initial Setup

Use the following commands for your initial setup, for further information see the specific command listed in *Chapter 5, CLI Commands*.

Command	Description
`set date dd/mm/yyyy`	Set the system date, using the format *day/month/year*. See the *set date* command for details.
`set time {hh:mm:ss}`	Set the system time. See the *set time* command for details.
`set id {"id-name"}`	Set the systemID name. Remember to enclose this name in quotes. See the *set id* command for details.
`set clock {nonrevertive|revertive|switch}`	Set the signal clock switching. See the *set clock* command for details.
`set {clock1|clock2} {source}`	Set the primary and secondary clock source. See the *set clock (1 and 2)* command for details.
`set ethernet ip address {ip-addr} [mask]`	Set the Ethernet IP address and optionally the subnet mask, for the Axxius 800. See the *set ethernet ip address* command for details.
`set ip gateway {ip-addr}`	Set the IP gateway for the Axxius 800. See the *set ip gateway* command for details.
`clear log`	Initialize the event log. See the *clear key* command for details.
`status equipment [slot]`	See the status of the equipment. See the *status equipment* command for details.

Set Up Security

Use the following commands to set up the security on the Axxius 800.

Command	Description
`set user {"user-name"} level {1-3}`	Specify the user name and the security level. See *set user* command for details.
`set user {"user-name"} password`	Set a password for the user. See *set user* command for details.

Set Up a DS0/Channel

Use the following commands to set up a DS0.

Command	Description
`set {ds0-addr} type {data|voice}`	Set the channel type. See *set (ds0)* command for details.
`set {ds0-addr} signal {ls|gs|emw|emdw|emi|emicpd}`	Set the signaling option for the channel. See *set (ds0)* command for details.

Set Up a DS1/T1

Use the following commands to set up a DS1. See the *set (ds1)* command for more details.

Command	Description
`set {ds1-addr} up`	Activate the port.
`set {ds1-addr} fdl {none|t1403}`	Set the Facilities Data Link (FDL) capabilities.
`set {ds1-addr} framing {d4| esf}`	Set the framing option for the DS1.
`set {ds1-addr} id {"id-name"}`	Set the circuit identification name for the DS1.
`set {ds1-addr} lbo {1-8}`	Set the line buildout value for the DS1.
`set {ds1-addr} linecode {ami|b8zs}`	Set the linecode for the DS1.
`set {ds1-addr} loopdetect {on|off}`	Set the detection/reaction to CSU loopcodes.
`set {ds1-addr} threshold {day|min15} {bes|css|dm|es |lcv|les|pcv|sefs|ses|uas)`	Set default thresholds for the DS1.

Set Up a DS3

Use the following commands for DS3 setup. See the *set (ds3)* command for more details.

Command	Description
`set {ds3-addr} up`	Activate the port.
`set {ds3-addr} id {"id-name"}`	Set the DS3 ID.
`set {ds3-addr} clock {loop|normal}`	Set the transmit clock source.
`set {ds3-addr} berthreshold {value}`	Set the Bit Error Rate protection switchover threshold.
`set {ds3-addr} dejitter {off|on}`	Set the De-jitter buffer on or off.
`set {ds3-addr} equipment id {"string"}`	Set the DS3 equipment PMDL ID string.
`set {ds3-addr} facility id {"string"}`	Set the DS3 facility PMDL ID string.
`set {ds3-addr} frame {"string"}`	Set the DS3 frame PMDL ID string.
`set {ds3-addr} framing {cbit|m23}`	Set the framing option for the DS3.
`set {ds3-addr} location id {"string"}`	Set the DS3 location PMDL ID string.
`set {ds3-addr} portnum {"string"}`	Set the DS3 port number PMDL string.
`set {ds3-addr} gennum {"string"}`	Set DS3 generation number PMDL string.
`set {ds3-addr} loopdetect {off|on}`	Set the detection/reaction to CSU loopcodes.
`set {ds3-addr} protect {off|on}`	Set port protection on the DS3.
`set {ds3-addr} reversion {off|on}`	Set protection reversion on the DS3.
`set {ds1-addr} threshold {day|min15} {ccv|ces|cses|lcv |les|pcv|pes|pses|sefs|uas)`	Set default thresholds for a DS3.
`set {ds3-addr} unit {"string"}`	Set the DS3 unit code PMDL string.

Setup DS1 ADPCM

Before configuring the DS1 ADPCM card, there are some basics that need to be considered:

- All DS0s to be compressed reside on T1 number 1 of the ADPCM card
- ADPCM is capable of transporting any combination of 64 and 32K
- All 24 DS0s can be transported either compressed or uncompressed, but not both at the same time.
- All DS0s to be compressed must be set to *type data*.

The following is a basic setup:

Command	Description
`Connect T1 cable to port 1 of the ADPCM service card`	
`set {adpcm_card-addr} {none|map1|map2|map3}`	Enable compressing by selecting Map type. Note: **none** disables compression. See the following section on Maps.
`show {adpcm_card-addr}`	Displays the status of the card, and the mapping.
`set {2:1:1-12} type data`	Set the channel (DS0) type to data on the ADPCM channels. See *set (ds0)* command for more information.
`set {2:4:1-12} type data`	Set the channel (DS0) type to data on the channels for cross-connect. See *set (ds0)* command for more information.
`connect 2:1:1-12 2:4:1-12`	Set cross-connects. The example connects all 24 channels of the ADPCM to the 12 channels of the T1 (now compressed) on port 4. Example is with **map2**
`show connect adpcm {2:1}`	Displays the connections made above.

Establish a Static Channel Connection

Use the following commands to establish a static channel connection.

Command	Description
`set {ds0-addr} type {voice|data}`	Set the channel type for the channel you want to map. See *set (ds0)* command for details.
`set {ds0-addr} signal {emdw|emi|emicpd|emw|gs|ls}`	Set the signaling option for the channel you want to map. See *set (ds0)* command for details.
`connect {slot:port} {slot:port}`	Connect the channels. See the *show connect* command for details.

Set Up a V.35 Port

Use the following commands to set up a V.35 port.

Command	Description
`set {v35-addr} cts {cd|high|low|rts}`	Set the Clear to Send operation mode. See *set (v35)* command for details.
`set {v35-addr} data {invert|normal}`	Set the data mode. See *set (v35)* command for details.
`set {v35-addr} clock {source|external}`	Set the clock mode. See *set (v35)* command for details.
`set {v35-addr} speed {56K|64K}`	Set the speed. See *set (v35)* command for details.
`set {v35-addr} txclkinv {invert|normal}`	Set the transmit clock inversion mode. See *set (v35)* command for details.
`set {v35-addr} rxclkinv {invert|normal}`	Set the receive clock inversion mode. See *set (v35)* command for details.

Set Up a Single Channel POTS card

Use the following commands to set up a POTS card.

Command	Description
`set {fxsPS-addr|fxsPSM-addr} {ls|lsrb}`	Set the signaling option for the port. See the *set (fxsPS or fxsPSM)* command for details.
`set {fxsPS-addr|fxsPSM-addr} rxgain {n}`	Set the receive gain/loss in dB. See the *set (fxsPS or fxsPSM)* command for details.
`set {fxsPS-addr|fxsPSM-addr} txgain {n}`	Set the transmit gain/loss in dB. See the *set (fxsPS or fxsPSM)* command for details.

Change the IP Address of the DS0 Management Channel

Use the following commands to change the IP over DS0 Management Channel for the Axxius 800.

Command	Description
`set ipds0 down`	Set the DS0 management channel down
`set ipds0 ip address {ip-addr}`	Set the DS0 management channel IP address.
`set ipds0 up`	Set the DS0 management channel up.

Set Up IP Addresses for Telnet CLI

Use the following commands to setup Telnet addresses for the Command Line Interface (CLI).

Command	Description
`set ethernet ip address {ip-addr} {mask}`	Set the Ethernet IP address, in the IP address format. See the *set ethernet ip address* command for more details.
`set ip gateway {ip-addr}`	Set the IP gateway, in the conventional IP address format. See the *set ip gateway* command for more details.

Upgrade the Axxius 800 Software

Use the following commands to determine the Controller software level, then upgrade the software to the latest version.

Command	Description
`status equipment`	Determine the software level. See the *status equipment* command for more information.
`load tftp {ip-addr} {"file-name"} (or load xmodem)`	Load the new software to the Axxius 800. See the *load tftp* and *load xmodem* command for more information.

Basic Setup of a Protected System

To set up a Protected System, the following is required:

- Axxius 800 with software 1.2 or higher
- Low Speed Protection (Relay) card
- 2 - 6 Quad T1 Cards (1 designated as Backup card, others to be protected)

Use the following steps to set up a Protected System.

1. Install a Relay card in the Axxius Relay slot.
2. Set the jumpers on the Quad T1 cards to route the signal to the wire wrap pins.
3. Prewire the chassis for Quad T1 cards (wire wrap pins).
   Note: It is imperative that the slot designated for the Quad T1 backup card have NO wire wrap connections.
4. Install Backup Quad T1 card into the designated service card slot (no prewire).
5. Install Quad T1 cards that are to be protected into the prewired card slots.
   Note: These QT1 cards can be in any slot, as well as other card types. Also removal and/or replacement of any of these service cards will not effect service to cards in adjacent slots.

   Perform the following CLI commands to configure the system for protection.

Command	Description
`set lsbackup {t1_card-addr}`	Defines the backup slot (can be any slot)
`set lsprotect enable`	To enable the Low Speed Protection option
`set lsprotect {slot:port} {revertive|nonrevertive} [priority] [1-7]`	This command defines the protected cards. Set all ports to revertive or non-revertive as necessary with an optional priority level
`show lsprotect`	To display the current settings
`status lsprotect`	To display the current status

With the above steps protection is now provided for the specified cards. Any single protected card can be pulled from its slot with only minimal interruption to service. Since protection is on a 1xN basis once protection is provided for a failed port other ports cannot be protected at the same time.